Please amend the claims as follows:

Claim 1 (Currently Amended): A cleaning method for cleaning a process chamber contaminated with metal in a substrate processing apparatus for performing a vacuum process on a substrate, the method comprising:

after the process, supplying ~~a gas containing~~ O_2 gas and H_2 gas and an inactive gas, or O_2 gas and H_2 gas, into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the gas to clean the process chamber.

Claim 2 (Original): The process chamber cleaning method according to claim 1, wherein the process on the substrate is an oxidation process on a substrate containing metal.

Claim 3 (Original): The process chamber cleaning method according to claim 1, wherein the metal is tungsten.

Claim 4 (Original): The process chamber cleaning method according to claim 1, wherein the process on the substrate is a plasma process.

Claim 5 (Original): The process chamber cleaning method according to claim 4, wherein the plasma process on the substrate and the cleaning are performed by plasma generated by a planar antenna or plasma generated by an inductive coupling type.

Claim 6 (Original): The process chamber cleaning method according to claim 4, wherein the plasma process on the substrate and the cleaning are performed by plasma generated by microwaves supplied into the process chamber through a planar antenna having a plurality of slots.

Claims 7-8 (Canceled).

Claim 9 (Currently Amended): The process chamber cleaning method according to claim [[8]] 1, wherein the cleaning is performed by plasma having a ratio of H_2 gas relative to O_2 gas set at 2 or more.

Claim 10 (Currently Amended): The process chamber cleaning method according to claim [[8]] 1, wherein the cleaning is performed by plasma having a ratio of H_2 gas relative to O_2 gas set at 4 or more.

Claim 11 (Original): The process chamber cleaning method according to claim 1, wherein the process chamber is heated by plasma prior to the cleaning.

Claim 12 (Original): The process chamber cleaning method according to claim 1, wherein the substrate processing apparatus is arranged such that at least a part of a surface exposed to plasma is made of a dielectric material in the process chamber.

Claim 13 (Currently Amended): A cleaning method for cleaning a process chamber in a substrate processing apparatus for performing a plasma process on a substrate having a metal-containing film, the method comprising:
after the process, supplying a gas containing O_2 gas and H_2 gas and an inactive gas, or O_2 gas and H_2 gas, into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the gas to clean the process chamber.

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Claim 14 (Original): The process chamber cleaning method according to claim 13, wherein the metal-containing film is a tungsten-containing film.

Claim 15 (Original): The process chamber cleaning method according to claim 14, wherein the plasma process on the substrate having a metal-containing film is a selective oxidation process on a gate electrode including a tungsten-containing film and a poly-silicon film.

Claim 16 (Original): The process chamber cleaning method according to claim 13, wherein the plasma process on the substrate and the cleaning are performed by plasma generated by a planar antenna or plasma generated by an inductive coupling type.

Claim 17 (Original): The process chamber cleaning method according to claim 13, wherein the plasma process on the substrate and the cleaning are performed by plasma generated by microwaves supplied into the process chamber through a planar antenna having a plurality of slots.

Claims 18-19 (Canceled).

Claim 20 (Currently Amended): The process chamber cleaning method according to claim [[19]] 13, wherein the cleaning is performed by plasma having a ratio of H_2 gas relative to O_2 gas set at 2 or more.

Claim 21 (Currently Amended): The process chamber cleaning method according to claim [[19]] 13, wherein the cleaning is performed by plasma having a ratio of H_2 gas relative to O_2 gas set at 4 or more.

Claim 22 (Canceled).

Claim 23 (Original): The process chamber cleaning method according to claim 13, wherein the cleaning is performed while temperature inside the process chamber is set to be about 400 to 800°C.

Claim 24 (Original): The process chamber cleaning method according to claim 13, wherein the cleaning is performed while pressure inside the process chamber is set to be less than 126 Pa.

Claim 25 (Original): The process chamber cleaning method according to claim 13, wherein the substrate processing apparatus is arranged such that at least a part of a surface exposed to plasma is made of a dielectric material in the process chamber.

Claim 26 (Currently Amended): A computer program for execution on a computer, which, when executed by the computer, controls a substrate processing apparatus for performing a plasma process on a substrate having a metal-containing film, so as to execute a cleaning method for cleaning a process chamber in the substrate processing apparatus, wherein the method comprises, after the process, supplying a gas containing O_2 gas and H_2 gas and an inactive gas, or O_2 gas and H_2 gas, into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the gas to clean the process chamber.

Claim 27 (Currently Amended): A storage medium that stores a control program for execution on a computer, which, when executed by the computer, controls a substrate processing apparatus for performing a plasma process on a substrate having a metal-containing film, so as to execute a cleaning method for cleaning a process chamber in the substrate processing apparatus, wherein the method comprises, after the process, supplying a ~~gas containing~~ O_2 gas and H_2 gas and an inactive gas, or O_2 gas and H_2 gas, into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the gas to clean the process chamber.

Claim 28 (Currently Amended): A plasma processing apparatus comprising:

a plasma supply source configured to generate plasma;

a process container that defines a process chamber for performing a process on a substrate by the plasma;

a substrate table configured to place the substrate thereon within the process container;

exhaust means for decreasing pressure inside the process container;

gas supply means for supplying a gas into the process container; and

a control section configured to conduct control to execute a cleaning method for cleaning a process chamber in a substrate processing apparatus for performing a plasma process on a substrate having a metal-containing film, wherein the method comprises, after the process, supplying ~~a gas containing~~ O_2 gas and H_2 gas and an inactive gas, or O_2 gas and H_2 gas, into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the gas to clean the process chamber.

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Claim 29 (Currently Amended): A substrate processing method comprising:

cleaning a process chamber in a substrate processing apparatus for performing a plasma process on a substrate having a metal-containing film, wherein the cleaning comprises, after the process, supplying a gas containing O$_2$ gas and H$_2$ gas and an inactive gas, or O$_2$ gas and H$_2$ gas, into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the gas to clean the process chamber; and

performing a plasma process on a substrate within the process chamber after the cleaning.

Claims 30-34 (Canceled).

Claim 35 (Currently Amended): The cleaning end point detecting method according to claim [[34]] 38, wherein an oxidation process on the substrate including the tungsten-containing film is a selective oxidation process on a poly-silicon film of a laminated film including the tungsten-containing film and the poly-silicon film.

Claims 36-37 (Canceled).

Claim 38 (Currently Amended): A cleaning method for cleaning a process chamber by plasma of a cleaning gas of O$_2$ gas and H$_2$ gas and an inactive gas, or O$_2$ gas and H$_2$ gas, in a plasma processing apparatus for performing a process on a substrate having a metal-containing film formed thereon, the method comprising:

measuring emission intensity of radicals that increase with progress of cleaning within the process chamber, and detecting a cleaning end point from values thus obtained.

Claim 39 (Original): The cleaning method according to claim 38, wherein the metal-containing film is a tungsten-containing film.

Claim 40 (Original): The cleaning method according to claim 38, wherein the method comprises, after the process on the substrate, supplying a cleaning gas into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the cleaning gas to clean the process chamber.

Claim 41 (Original): The process chamber cleaning method according to claim 38, wherein the cleaning is performed by plasma generated by an inductive coupling type, plasma generated by a parallel-plate type, plasma generated by a planar antenna type, reflection wave plasma, or magnetron plasma.

Claim 42 (Original): The process chamber cleaning method according to claim 38, wherein the cleaning is performed by plasma generated by microwaves supplied into the process chamber through a planar antenna having a plurality of slots.

Claim 43 (Currently Amended): A control program for execution on a computer, which, when executed by the computer, controls a plasma processing apparatus for performing a process on a substrate having a metal-containing film formed thereon, so as to execute a cleaning method for cleaning a process chamber by plasma of a cleaning gas of O_2 gas and H_2 gas and an inactive gas, or O_2 gas and H_2 gas, in the plasma processing apparatus, wherein the method comprises measuring emission intensity of radicals that increase with progress of cleaning within the process chamber, and detecting a cleaning end point from values thus obtained.

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Claim 44 (Currently Amended): A computer storage medium that stores a control program for execution on a computer, which, when executed by the computer, controls a plasma processing apparatus for performing a process on a substrate having a metal-containing film formed thereon, so as to execute a cleaning method for cleaning a process chamber by plasma of a cleaning gas of O_2 gas and H_2 gas and an inactive gas, or O_2 gas and H_2 gas, in the plasma processing apparatus, wherein the method comprises measuring emission intensity of radicals that increase with progress of cleaning within the process chamber, and detecting a cleaning end point from values thus obtained.

Claim 45 (Currently Amended): A plasma processing apparatus comprising:

a plasma supply source configured to generate plasma;

a process container that defines a process chamber for performing a process on a substrate by the plasma;

a substrate table configured to place the substrate thereon within the process container;

exhaust means for decreasing pressure inside the process container;

gas supply means for supplying a gas into the process container; and

a control section configured to conduct control to execute a cleaning method for cleaning a process chamber by plasma of a cleaning gas of O_2 gas and H_2 gas and an inactive gas, or O_2 gas and H_2 gas, in a plasma processing apparatus for performing a process on a substrate having a metal-containing film formed thereon, wherein the method comprises measuring emission intensity of radicals that increase with progress of cleaning within the process chamber, and detecting a cleaning end point from values thus obtained.

Claim 46 (Canceled).

Claim 47 (New): A cleaning method for cleaning a process chamber contaminated with metal in a substrate processing apparatus for performing a vacuum process on a substrate, the method comprising:

after the process, supplying O_2 gas alone, or O_2 gas and an inactive gas, into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the gas to clean the process chamber.

Claim 48 (New): A cleaning method for cleaning a process chamber in a substrate processing apparatus for performing a plasma process on a substrate having a metal-containing film, the method comprising:

after the process, supplying O_2 gas alone, or O_2 gas and an inactive gas, into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the gas to clean the process chamber.

Claim 49 (New): A computer program for execution on a computer, which, when executed by the computer, controls a substrate processing apparatus for performing a plasma process on a substrate having a metal-containing film, so as to execute a cleaning method for cleaning a process chamber in the substrate processing apparatus, wherein the method comprises, after the process, supplying O_2 gas alone, or O_2 gas and an inactive gas, into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the gas to clean the process chamber.

Claim 50 (New): A storage medium that stores a control program for execution on a computer, which, when executed by the computer, controls a substrate processing apparatus

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for performing a plasma process on a substrate having a metal-containing film, so as to execute a cleaning method for cleaning a process chamber in the substrate processing apparatus, wherein the method comprises, after the process, supplying O_2 gas alone, or O_2 gas and an inactive gas, into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the gas to clean the process chamber.

Claim 51 (New): A plasma processing apparatus comprising:

a plasma supply source configured to generate plasma;

a process container that defines a process chamber for performing a process on a substrate by the plasma;

a substrate table configured to place the substrate thereon within the process container;

exhaust means for decreasing pressure inside the process container;

gas supply means for supplying a gas into the process container; and

a control section configured to conduct control to execute a cleaning method for cleaning a process chamber in a substrate processing apparatus for performing a plasma process on a substrate having a metal-containing film, wherein the method comprises, after the process, supplying O_2 gas alone, or O_2 gas and an inactive gas, into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the gas to clean the process chamber.

Claim 52 (New): The process chamber cleaning method according to claim 29, wherein the cleaning is performed by plasma of O_2 gas alone, or O_2 gas and an inactive gas.

Claim 53 (New): The process chamber cleaning method according to claim 29, wherein the cleaning is performed by plasma of O_2 gas and H_2 gas and an inactive gas, or O_2 gas and H_2 gas.

Claim 54 (New): The process chamber cleaning method according to claim 53, wherein the cleaning is performed by plasma having a ratio of H_2 gas relative to O_2 gas set at 2 or more.

Claim 55 (New): The process chamber cleaning method according to claim 53, wherein the cleaning is performed by plasma having a ratio of H_2 gas relative to O_2 gas set at 4 or more.

Claim 56 (New): The process chamber cleaning method according to claim 29, further comprising seasoning the process chamber under the same conditions as cleaning, prior to the plasma process.